## REMARKS

In the present Amendment, Claim 1 has been amended to recite that the size of the catalyst is 0.5 to 10 mm. Section 112 support for this amendment is found, for example, at page 2, lines 14-15 of the specification. No new matter has been added, and entry of the Amendment is respectfully requested.

Claims 1-4 are pending.

At page 2 of the Action, Claims 1-4 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Codignola (US 3,127,452).

Applicants submit that this rejection should be withdrawn because Codignola does not disclose or render obvious the presently claimed process for hydrogenating an olefin.

The present invention relates to a process for hydrogenating an olefin as defined in claim 1.

In the present invention, a liquid containing an olefin and a gas containing hydrogen is passed upwardly (upflow) through a packed bed of a solid hydrogenation catalyst. As reasons why the upflow is applied, a runaway of the reaction according to difficulty of control of the reaction temperature caused by generation of hot spots, can be suppressed because the liquid can be uniformly flowed in the packed bed without localization (page 3, lines 9-15 of the specification).

The utmost characteristic of the present invention is to control a superficial velocity of the gas to 3.0 cm/sec or higher. When the superficial velocity of the gas is lower than 3.0 cm/sec, the apparent reaction rate lowers. In addition, the lowering of the hydrogenation rate of

the olefin leads to lowering of the yield through a tar formation reaction caused by formation of an olefin dimer and olefin polymer (page 3, lines 16-27 of the specification).

When the superficial velocity of the gas is higher than 10 cm/sec , a pressure loss of the packed bed may increase because wear and tear powder of the catalyst is formed by friction among catalysts (page 4, lines 1-4 of the specification).

The size of the catalyst is usually 0.5 to 10 mm. When the size is too small, a pressure loss increases and leads to uneconomical. On the other hand, when the size is too large, it is not preferable because a catalyst activity decreases and a reaction fluid flows non-uniformly (page 2, lines 14-19 of the specification).

In the conventional upflow reactor, as shown in Fig. 1 and Examples 1 (1) to (3) of Codignola, the reaction is conducted under a condition of smaller superficial velocity which is outside the present claim, in order to suppress the formation of wear and tear powder of the catalyst formed by friction among catalysts.

In the conventional downflow reactor, as shown in Fig. 2 and Example 2 of Codignola, the reaction is conducted under a condition of larger superficial velocity.

Under such circumstances, the present inventors found that, in a process for hydrogenating an olefin in a upflow reactor, the hydrogenating reaction can be favorably conducted at high reaction rate and good catalyst efficiency, by controlling the superficial velocity of the gas and the size of the catalyst in a specific range.

The Examiner states that the claimed process is not the processes disclosed in the Examples. There are so big differences between the claimed process and the process disclosed in Examples.

The Examiner further notes that other variables are not kept constant in the Comparative Examples in the specification, therefore the change of the superficial velocity cannot be compared.

Applicants respectfully disagree.

The present specification discloses, as a typical hydrogenation reaction, examples using α-methylstyrene, from industrial viewpoint. By considering the exemplified modes for conducting the present invention, it is clear for ordinary skill in the art that the effect of the present invention is not specifically limited only to the hydrogenation of α-methylstyrene but also applicable to hydrogenation of olefins conducted by using hydrogen gas in the presence of a solid catalyst.

The superficial velocity of the gas is determined by various variables, such as flow rate of the gas, cross section of the reactor, temperature, pressure, etc.

Accordingly, the Examiner's assertion that "the change of the superficial velocity cannot be compared because other variables in the Comparative Examples are not kept constant" is not reasonable.

The present invention provides a hydrogenation process of olefins, in which an upflow reactor is used wherein a liquid can be uniformly flowed in the packed bed without localization, and the problem of lowering the hydrogenating rate is not caused, as shown in the Examples and

Comparative Examples, by controlling the superficial velocity of the gas and the size of the catalyst in a specific range.

By doing so, unexpectedly superior results can be obtained from industrial viewpoint, and the problems caused in the conventional art can be resolved.

Codignola does not teach or suggest the superficial velocity range and the size of the catalyst specified in the present claims. Codignola does not teach or suggest the unexpectedly superior results provided by the present invention, either.

Accordingly, the present invention is not obvious over Codignola.

In view of the above, reconsideration and withdrawal of the § 103(a) rejection based on Codignola are respectfully requested.

Allowance is respectfully requested. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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